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NEW JAPANESE FUNGI

NOTES AND TRANSLATIONS—II

TYÔZABURÔ TANAKA

PHYTOPHTHORA ALLII K. Sawada sp. nov. in Nôji Shikenjô Tokubetsu Hôkoku (Special Report Agric. Exper. Station), Taiwan (Formosa), No. 11, p. 59–60, pl. 1–2. T. 4, iii, Mar. 1915.

Forming a cottony white mycelial mass on diseased portions of leaves of *Allium fistulosum*. Hyphae filiform, hyaline, thin-walled, with granular contents, continuous when young but always septate when old, much branched, 3–8 μ across, penetrating the cell walls of the host tissues. Haustoria not observed. Conidiophores appear through stomata of the host or sometimes break through the epidermal tissue, mostly accompanied by hyphae; conidiophores filiform, fine, single or branching pseudo-dichotomously or rather irregularly ramose, 140–480 × 4–6 μ; conidia terminal, globular, ovoid, obovoid or lemon-shaped, hyaline, apically mamillate with a hemispherical papillum 5–10 μ high, 40–74 × 30–50 μ, averaging 49.4 × 36.5 μ, with or without a thickened septum at the base; falling off not rarely with a portion of persistent conidiophore at the end, producing 15–60 zoospores or germinating with germ tube.

Oogonia formations were observed in cultures on media made of bean agar-agar, and lima bean agar-agar. Oogonia spherical, thin-walled, diam. 17–26 μ (average 20.7 μ), containing one oospore; oospores spherical, colorless or pale-honey-yellow, diam. 14–23 μ (averaging 16.9 μ), walls 0.5–1.5 μ thick. Antheridia surrounding tightly the stalk of oogonia then becoming attached close to the wall of oogonia at the lower portion not far from the juncture of the stalk, usually round to obovoid, 8–18 × 10–14 μ.

Parasitic on the leaves and flower stalks of *Allium fistulosum*.

Type locality: Taihoku-chô Chônaiho-shô, Taiwan (Formosa), collected by K. Sawada, Feb. 17, 1913 and July 3, 1913.

Illustrations: 45 black and white lithographic figures showing detailed structure of the fungus.

An attempt to inoculate the ordinary onion (*Allium Cepa*) with this fungus was not successful, so it seems that the infection is limited to the Japanese welsh onion (*Allium fistulosum*); the only plant susceptible to the disease in inoculation tests was *Epiphyllum truncatum* (*Cactaceae*). The disease is not at present widely distributed and the injury not very serious. It is desirable to eradicate it before it spreads to other localities.

The paper gives a review of the genus *Phytophthora* and allied genera; the following species are discussed:

Phytophthora cactorum (C. et L.) Schroet., *P. cactorum* (C. et L.) Schroet. var. *Arecae* Colem, *P. colocasiae* Rac., *P. faberi* Maubl., *P. infestans* (Mont.) de Bary, *P. nicotianae* Breda de Haan, *P. parasitica* Dast, *P. Phaseoli* Thaxt., *P. Syringae* Kleb., *P. Thalictri* Wils. et Davis, *Kawakamia Cyperi* (Miy. et Ideta) Miyabe, *Pythiacystis citrophthora* Smith.

PHYTOPHTHORA MELONGENAE K. Sawada sp. nov. in Nôji Shikenjô Tokubetsu Hôkoku (Special Report Agric. Exper. Station), Taiwan (Formosa) No. 11, p. 77–79, pl. 3. T. 4, iii, Mar. 1915.

Hyphae intercellular in the host tissue or freely penetrating the cell wall, much branched, not septate in juvenile stage, but septate when mature; aerial hyphae mostly not branching, usually attaining a considerable length, nearly uniform in diameter, the base always irregularly twisted, swelled or short-branched, and very characteristic; diam. of hyphae 4–8 μ; haustoria none. Conidiophores hardly distinguishable from aerial hyphae, filiform, delicate, very much elongated, the shortest measuring 80 μ in length, 3–5 μ across; conidia spherical, broad-oval or oval, 24–72 × 20–48 μ, average 42.4 × 33.9 μ, with apical hemispherical papillae 3–5 μ high, producing several to 40 zoospores; zoospores ovoid or ellipsoid, 10–11 × 8 μ, with 2 cilia; chlamydospores yellowish-brown, spherical, 25–42 μ in diam.; oogonia formed in cultures on bean agar-agar medium, spherical, 18–23 × 20–24 μ, containing one oospore; oospore spherical, walls 2 μ thick, colorless to very pale yellowish-brown, diameter 17–21 μ. Antheridia not formed on the same hyphae that bear the oogonia but on the end of other hyphae, surrounding tightly the oogonial stalk and attached to the wall of oogonia at the juncture with the stalk, oblate spheroidal or nearly spherical, 10–14 × 12–16 μ.

Parasitic on the fruit of *Solanum Melongena* (Egg plant).

Type locality: Taihoku-chô, Chônaiho-shô, Taiwan (Formosa), June 18, 1914, July 10, 1914, and Sept. 6, 1914.

Illustrations: 24 black and white lithographic figures showing detailed structure of fungus.

Not only the Formosan white egg plant but all other Japanese varieties are susceptible to this disease and in one case 60 to 70 per cent. of the crop was lost. Inoculation tests proved that other solanaceous plants are susceptible and such plants as tobacco, tomato and even Irish potato were attacked. Among plants belonging to other families, figs, *Areca Catechu*, and *Hibiscus esculentum* were counted as susceptible hosts, and in a lesser degree *Epiphyllum truncatum* and *Ricinus communis.*

ZUKALIA NANTOENSIS K. Sawada sp. nov. in Nôji Shikenjô Tokubetsu Hôkoku (Special Report Agric. Exper. Station), Taiwan (Formosa), No. 11, p. 123, pl. 4, figs. 14–18. T. 4, iii, Mar. 1915.

Epiphyllous, sometimes also hypophyllous, lichenous, spreading over an area 2–5 mm. across, tightly coalescent; hyphae fuliginous, thick-walled, 8 μ across, septate and sparsely furnished with hyphopodia, oblong bodies with rounded end usually on a stalk 18–25 μ long. Pycnidia and perithecia grow on the mycelial layer, both orbicular black bodies, mostly sessile, sometimes on stalks 18–25 μ long; pycnidia 63–95 μ, containing numerous pycnospores; pycnospores pale-brown, ellipsoid to oblong, glabrous, unicellate, bi-nucleate, 6–8 × 3–4 μ; perithecia 132–180 μ in diameter, with numerous asci; asci oblong-clavate, ovoid-oblong, with short stipules, hyaline, 33–49 × 10–12 μ, containing 8 spores; ascospores oblong to short clavate, septate at the middle, colorless, blunt or obtuse at both ends, 9–13 × 3.5–5 μ.

On leaves of *Thea sinensis.*

Type localities: Nantô-chô, Gyochi, Taiwan (Formosa), Oct. 30, 1907, Suzuki, Rikiji; Nantô-chô Shinjô, Taiwan (Formosa), Oct. 17, 1913, Fujikuro, Yosaburô.

This fungus causes the Susu-byô (Sooty mould disease) of tea in Formosa, mostly occurring with *Zukalia Theae* K. Sawada, *Scorias capitata* K. Sawada, and *Capnodium Footii* Berk. et Desm.

MASSARIA PHORCIOIDES I. Miyake sp. nov. in Sangyô Shikenjô Hôkoku (Technical Report, Imperial Sericultural Experiment Station), Tôkyô, Japan, 1^5: 316, pl. 16, figs. 4–5. T. 5, xii, Dec. 1916.

Perithecia scattered over the twigs forming black spots, the diseased cortex of the twig being very easily separated from the wood. Perithecia hypoepidermal, opening with ostiola, consisting of pseudo-parenchymatous tissue, black, spherical or ellipsoid, 250–300 μ in diameter and 200–250 μ in height, containing few asci; asci clavate to elliptic, 110–140 × 35–42 μ, short stipitate, with 8 biseriate spores, paraphysate; ascospores fusiform, dark-yellowish-brown, 1-septate and 3–5 nucleate at first, then 4, rarely 3–5 septate, constricted only at the middle septum first formed, 45–52 × 19–22 μ, covered with a gelatinous envelope; paraphyses filiform, stout, with granular contents.

On twigs of *Morus alba,* possibly parasitic (common).

Type localities: Gifu-ken (prefecture) Kaidzu-gun Kaisaimura, Mar. 1909, I. Miyake; Fukui-ken (prefecture) Tsuruga, Mar. 1909, K. Hara; Fukushima-ken (prefecture) Fukushima-shi and Yamagata-ken (pref.) Yamagata-shi, Mar. 1915, I. Miyake; Akita-ken (pref.) Akita-shi, and Ôtate-chô, Iwate-ken (pref.) Fukuoka-chô, and Kyôto-fu (pref.) Ayabe-chô, Apr., 1915, I. Miyake.

Distribution: China, Japan.

Illustrations: 2 black and white lithographic figures showing perithecium and ascospores.

At the side close to the perithecia, a conidial form usually occurs which consists of rosy-colored, caespitose conidiophores and spherical or short elliptical hyaline conidia. The relation between this form and the ascogenous form here described has not yet been studied. The characteristic perithecial position of this fungus can be seen with the naked eye if we examine carefully the blackened discoidal surface of the diseased spot on which a highly darkened spot at the central part is to be observed which represents the perithecial body underlying the epidermal tissue.

MASSARIA MORI, I. Miyake sp. nov. in Sangyô Shikenjô Hôkoku (Technical Report, Imperial Sericultural Experiment Station), Tôkyô, Japan, 1^5: 319, pl. 17, figs. 12, 13, 14. T. 5, xii, Dec. 1916. (Japanese.)

Perithecia covered by epidermis which is pierced by shortly projecting ostiola, scattered or 2–3 together, mostly surrounded by black hyphal substance pseudo-parenchymatous in appearance, globoid or ellipsoid, 400–600 μ in diam.; perithecial walls consistascospores biseriate, nearly fusoid, somewhat acute but inconsiderably thickened at one end, 3-septate, constricted at the middle septum first formed but not at others, first nucleate with few large hyaline globules, then coarsely guttulate with yellowish-brown homogeneous contents, and finally opaque with blackish-brown fine granules, 55–70 × 18–23 μ, covered by a gelatinous envelope; paraphyses forked, 2.5–3.0 μ across, colorless and far longer than the asci.

On twigs of *Morus alba.*

Type localities: Akita-ken (prefecture) Yuzawa-chô, Mar., 1915, I. Miyake; Kyôtô-fu (pref.) Ayabe-chô, Apr., 1915, I. Miyake.

Illustrations: 3 black and white lithographic figures showing detailed structure.

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